

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 03 OCT 2005

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Applicant's or agent's file reference INTM-032WO	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/US04/10049	International filing date (day/month/year) 31 March 2004 (31.03.2004)	Priority date (day/month/year) 04 April 2003 (04.04.2003)
International Patent Classification (IPC) or national classification and IPC IPC(7): A61K 45/00, 47/00, 48/00, 49/10, 38/21 and US Cl.: 424/93.1, 85.4, 85.5, 85.6, 85.7; 514/44, 45, 46, 49, 50		
Applicant INTERMUNE. INC.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 62 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
  - a. ☐ (sent to the applicant and to the International Bureau) a total of \_\_\_ sheets, as follows:
    - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Box No. I    | Basis of the report   |
| <input type="checkbox"/> Box No. II              | Priority  |
| <input checked="" type="checkbox"/> Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |
| <input type="checkbox"/> Box No. IV              | Lack of unity of invention  |
| <input checked="" type="checkbox"/> Box No. V    | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> Box No. VI              | Certain documents cited   |
| <input checked="" type="checkbox"/> Box No. VII  | Certain defects in the international application  |
| <input checked="" type="checkbox"/> Box No. VIII | Certain observations on the international application   |

Date of submission of the demand <u>22 October 2004 (22.10.2004)</u>	Date of completion of this <u>16 August 2005 (16.08.2005)</u>
Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer <u>Bao Qun Li</u> Telephone No. 571-272-1600

Form PCT/IPEA/409 (cover sheet)(January 2004)

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US04/10049

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:

- ☐ international search (under Rules 12.3 and 23.1(b))  
☐ publication of the international application (under Rule 12.4)  
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☐ the international application as originally filed/furnished

☒ the description:

pages 1-53 \_\_\_\_\_ as originally filed/furnished

pages\* NONE \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* NONE \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☒ the claims:

pages 51 and 52 \_\_\_\_\_ as originally filed/furnished

pages\* NONE \_\_\_\_\_ as amended (together with any statement) under Article 19

pages\* NONE \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* NONE \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☐ the drawings:

pages NONE \_\_\_\_\_ as originally filed/furnished

pages\* NONE \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* NONE \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages \_\_\_\_\_

☐ the claims, Nos. \_\_\_\_\_

☐ the drawings, sheets/figs \_\_\_\_\_

☐ the sequence listing (*specify*): \_\_\_\_\_

☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages \_\_\_\_\_

☐ the claims, Nos. \_\_\_\_\_

☐ the drawings, sheets/figs \_\_\_\_\_

☐ the sequence listing (*specify*): \_\_\_\_\_

☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

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**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☒ the entire international application

☐ claims Nos. \_\_\_\_\_

because:

☐ the said international application, or the said claim Nos. \_\_\_\_\_ relate to the following subject matter which does not require an international preliminary examination (*specify*):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. \_\_\_\_\_ are so unclear that no meaningful opinion could be formed (*specify*):

☒ the claims, or said claims Nos. 1-13 are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claims Nos. 1-13

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐

has not been furnished

☐

does not comply with the standard

the computer readable form

☐

has not been furnished

☐

does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☐ See Supplemental Box for further details.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/US04/10049**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims <u>1-13</u>	YES
	Claims <u>NONE</u>	NO
Inventive Step (IS)	Claims <u>8-13</u>	YES
	Claims <u>1-7</u>	NO
Industrial Applicability (IA)	Claims <u>1-13</u>	YES
	Claims <u>NONE</u>	NO

**2. Citations and Explanations (Rule 70.7)**

Claims 1-7 lack an inventive step under PCT Article 33(3) as being obvious over Dusheiko G. HEPATOLOGY 1997, Vol. 26 (Suppl. 1), pages 112S-121S) in view of Margolin S. (WO 94/26249A), Shinichi et al. (Molecular Medicine 1999, Vol. 36, No. 2, pages 202-205) Schuppan D. et al. Cell Death and Differentiation. January 2003, Vol. 10, pages S59-S67) and Garcia et al. Journal of hepatology, December 2002, Vol. 37, pages 797-805).

Dusheiko G. teaches that a very rare but severe side effects of using a high dose of interferon treatment is pneumonitis with minimal lung fibrosis. Shinichi et al. teach that the current therapy of hepatitis virus infection is use of INF- $\alpha$  and/or INF- $\gamma$  optionally with nucleoside lamivudine (See entire document) or in combination with non-pirfenidone compound ribavirin.

Margolin S. teaches that pirfenidone and its analog is a compound useful for treating fibrotic lesion (See abstract and claims 1-22.

Schuppan et al. teach that hepatitis C infection usually causes liver fibrosis (See entire document).

Garcia et al. teach that pirfenidone effectively reverse experimental liver fibrosis in an animal model and they suggest that pirfenidone can be used for treating fibrosis affecting dissimilar organs (See entire document and especially, page 804).

Therefore it would have been obvious for a person with ordinary skill in the art to combine the teachings from cited references and treating a hepatitis C virus infection with interferon in combination with pirfenidone and a nucleoside in order to treat a fibrosis either cause by using interferon or by virus infection.

Claims 8-13 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest to use Non-pirfenidone or pirfenidone analog for treating the severe side effect cause by using INF- $\alpha$  and INF- $\gamma$ .

Claims 1-13 meet the criteria set out in PCT Article 33(4), and thus the remedy of using Non-pirfenidone or pirfenidone has an industrial applicability because the subject matter claimed can be made or used in industry.

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

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**Box No. VII Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

Claims 1-13 are objected to as lacking clarity under PCT Rule 66.2(a)(v) because the claims 1-13 are not fully supported by the description. The application, as originally filed, did not describe: any example of using a non-pirfenidone or pirfenidone to treat an INF-induced fibrosis in a virus infected animal model or in a virus infected patient.

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

International application No.

PCT/US04/10049

**Box No. VIII Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claims 1-13 are objected to as lacking clarity under PCT Rule 66.2(a)(v) because the claims 1-13 are not fully supported by the description. The application, as originally filed, did not describe: any example for using a non-pirfenidone or pirfenidone to treat an INF-induced fibrosis in a virus infected animal model or in a virus infected patient.